

Election method for RSS Council

The Society's bye-laws lay down that Council elections are to be conducted by a single transferable vote (STV) method. We use B L Meek's version of STV. This was chosen following lengthy study, in 1984, by a working group consisting of Janet Trewsdale, Bernard Silverman and myself.

Why STV?

The merit of STV is that it meets the criterion of leading to proportionality, as well as can reasonably be done, by any feature that the voters choose, if they decide to vote solely by that feature. This is in distinction from other proportional representation schemes that seek only to attain proportionality by political party which is irrelevant for Society elections. In practice, of course, there is no one feature by which fellows vote for Council. However, a system that does satisfy that criterion is much more likely to give a Council that represents their views, taken as a whole, than is any system that does not meet the criterion.

In a multiple-X first-past-the-post style of election many votes are ineffective, either by being assigned to candidates who fail, or by building up excessive majorities for popular candidates, while every vote for a candidate is also a vote against all the others. The result is that a bare majority can take all the seats instead of only their fair share and that tactical considerations become important when voting. It is inevitable that some votes must be ineffective but STV, by transferring votes when necessary in accordance with the voters' instructions, reduces the ineffective number to the theoretical minimum. The result is that each group of voters gets its fair chance and sincere voting becomes the only sensible strategy.

A quota is calculated from the number of votes and the number of seats and any candidate reaching it is elected. Having asked voters to list the candidates 1, 2, 3, etc., we count them as supporting their first choice so long as that candidate's fate is not yet settled. If the first choice is elected with a surplus above the quota, a due proportion of the votes can be transferred to second preferences, and so on. If at any point there is no surplus available but not all seats are yet filled, the candidate who currently has fewest votes is excluded, and all votes pointing at that candidate are transferred — this exclusion rule is not always fair, but we cannot find a better one that does not introduce other difficulties that are at least as bad.

If fellows feel strongly that there should be more Council members from a particular part of the country, or from one sex rather than the other, or from the ex-Institute

members, or any other category, the system ensures that they are able to get them, provided only that the number of such voters is sufficient to justify it. What it does not do is to enforce any such considerations, whether the voters want them or not. All is for the voters to decide, not for anyone else to decide what they ought to want.

Why Meek-style STV?

Traditional STV rules have been developed and improved over the years but have always had to contain approximations, to allow counting by hand without requiring excessive time and labour.

These traditional rules are not to be despised. Given the necessity of hand-counting, they do a surprisingly good job of getting nearly the right answer most of the time. They are greatly to be preferred to any multiple-X scheme, but in this computerised age counting by hand is no longer essential.

In 1969 Meek went back to first principles and proposed a scheme that got rid of these approximations but would be too long-winded for hand-counting. With computers widely available, it makes sense to use it, and the RSS is pioneering in doing so.

Report by I D Hill

An explanation of the STV rules used in the RSS Council elections follows. The full rules are available from the executive secretary at the Society's offices if desired.

RSS STV rules

1. At each stage in the count, each candidate has an associated 'keep value', which indicates the proportion of every vote, or part of a vote, received by that candidate which is kept, the remainder being transferred. Every candidate's keep value is initially set to 100%, and it does not change until that candidate is either elected (when it is reduced below 100%) or excluded (when it is permanently reset to 0%).

2. Each time the votes are counted, it is done in the following way: suppose that candidate A's keep value is 80%, candidate B's is 50%, candidate C's is 100% and candidate D's is 0%. Then a ballot paper listing DCAB (in that order) would be counted as:

nothing to D,
100% of a vote to C,
nothing to A or B (because C has taken the lot).

A ballot paper listing ABC (in that order) would be counted as:

80% of a vote to A,
10% of a vote to B (ie 50% of the remaining 20%),
10% of a vote to C (ie 100% of the remainder).

A ballot paper listing BDA (in that order) would be counted as:

50% of a vote to B,
nothing to D,
40% of a vote to A (ie 80% of the remaining 50%),
10% of a vote regarded as non-transferable (because this remaining 10% has run off the end of the list).

3. After each count of the votes, the current quota is calculated as:

(number of votes currently assigned to candidates) divided by (number of seats + 1) where the number of votes currently assigned to candidates is the total number of votes cast minus the current number regarded as non-transferable.

4. Any candidate who has more votes than the current quota is elected (if not already elected earlier) and given a new keep value, calculated as:

(candidate's current keep value) times (current quota) divided by (candidate's current votes).

Thus, for example, a candidate who has 4/3 times the number of votes necessary for election needs to keep only 3/4 of what that candidate previously kept.

5. After every such change, to one or more candidates, the votes are recounted using the new keep values. This has the effect of transferring the surplus votes of all the elected candidates in accordance with the voters' later preferences. However, it does not necessarily remove all surpluses in a single step, since some of A's votes may go to B, but some of B's may go to A simultaneously. This will leave each of them with a surplus, though the total surplus will be smaller than before. It is necessary to repeat steps 4 and 5 until, for all practical purposes, no surplus remains. In the present implementation, this is taken to be when the total remaining surplus is less than 1/10000 of a vote.

6. If, at the end of any count of the votes, no surplus remains, but the number of candidates elected so far falls short of the number of seats to be filled, then the candidate who currently has fewest votes is excluded, and that candidate's keep value is reset to 0%. The votes are then recounted. (If an exclusion is necessary and two or more candidates have equal fewest votes, then the one who had fewest votes at the earliest point at which they had unequal votes is excluded, but if they have always been equal, then one of the tied candidates is chosen by lot for exclusion.)

7. It is usually clear before all surpluses are transferred that an exclusion will be required and which candidate it must be. In such a case the exclusion may be made at once, giving a short cut which cannot change the final result of the election.